EEL 2161- EE Computing Methods
Homework                                  John Obara

Homework #3 due 1/29/06…

Using C++.NET write the following programs. Please email a copy of the working source listing to Steve at sjbrown8@eng.usf.edu. Please include in your subject heading EEL 2161 HW#3, your last name, and your last 3 digits of your student ID#.

Exercises
1) Write a C++ program that calls a function that outputs your name.
2) Write a C++ program that calculates and outputs the mean (average) of any three numbers input by the user. Make sure that your program clearly documents what you are attempting and provide some output lines to aid the person wanting to use this program.
3) Do problem #2 again, but after the main program gets the input, it should call a subroutine that calculates and outputs the mean.
4) Do problem #3 again, but have the subroutine send the answer back to the main program. The main program should output the final answer of the mean.
5) The variance is a measure of how spread out a distribution is. It is computed as the average squared deviation of each number from its mean. For example, for the numbers 1, 2, and 3, the mean is 2 and the variance is:

$$\sigma^2 = \frac{(1-2)^2 + (2-2)^2 + (3-2)^2}{3} = .667$$

Do problem #4 again. Add an additional function that accepts one number and returns the square of that number. Add a third function (yeah!) that takes advantage of all the other functions and calculates the variance and neatly outputs the variance of the three numbers input.
6) Some functions have already been pre-programmed. Check out the class help web page on include files. Using some of these write a program that calculates the normal probability distribution:

$$P(x) = \frac{1}{\sigma \sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

where the mean ($\mu = 0$) and the standard deviation ($\sigma = 1$). Allow the user to input $x$ and output what the normal distribution $P(x)$ is. Check to insure your program provides valid data!